Service Manual

NATIONAL
RADIO
PANASONIC

FM-AM FM STEREO PORTABLE RADIO

MODEL RF-973B

* This service manual includes only the changes of the RF-973 service manual (ORDER NO. RD-946) except for Parts List.
* This manual should be filed with the service manual for model RF-973 (ORDER NO. RD-946).
* When servicing model RF-973B, this service manual and the RF-973 service manual should be used together.

■REPLACEMENT PARTS LIST (MODEL RF-973B)

NOTES: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Ⓝ indicates the New Parts.
3. X−Z rank: X rank parts will cover 80% of repair needs. X+Y rank parts will cover 95% of repair needs. Z rank parts are less necessary.

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
INTEGRATED CIRCUIT, TRANSISTORS AND DIODES				
IC1	AN253	IF Amplifier	1	X
TR1	2SC921	FM RF Amplifier	1	X
TR2	2SC1359	FM Converter & AM Oscillator	1	X
TR3	2SC829	FM IF Amplifier & AM Mixer	1	X
TR4, 6, 7, 8, 9, 10, 11, 15	2SC828	Distributor, Eye Switching, Matrix Amplifier, Regulator, Pre Amplifier, AF Amplifier	8	X
TR5	2SA666	38kHz Amplifier	1	X
TR12, 16	2SC945	AF Amplifier	2	X
TR13, 17	2SD227	Power Amplifier	2	X
TR14, 18	2SA642	Power Amplifier	2	X
D1	RVDKB265J3	Stabilizer	1	X
D2	RVDSC-15	FM AFC	1	X
D3, 4	0A90	FM AGC, AM Detector & AGC	2	X
D5, 6, 7, 8, 9, 10	2-0A90	FM Detector, Doubler, (L-R) Detector	3 pairs	X
D11, 12	RVDVD1210	Operation Compensator	2	X
D14	LN12	Stereo Eye	1	Ⓝ X
D15	1S1211	Operation Compensator	1	X
RECTIFIER				
Se	RVD10DC1	Rectifier	1	X
COILS AND TRANSFORMERS				
L1, 4	RLE53	FM Detector & Oscillator Coil	1	Ⓝ X
L2	RL0Y75S2-0	Choke Coil	1	Y
L3	RL02B90-M	AM Oscillator Coil	1	X
L5	RLF2D94	AM Antenna Coil	1	X
L6, 7	RLM1X1-Y	Choke Coil	2	Y
L8	RL0Y10G5-0	Choke Coil	1	Y
L9	RL0Y25S5-0	Choke Coil	1	Y
T1	RL14B153-M	1st FM IF Transformer	1	X
T2	RL17W105Q-T	1st AM IF Transformer	1	X
T3	RL14B251	2nd FM IF Transformer	1	X
T4	RL12B4500-M	2nd AM IF Transformer	1	X
T5	RL14B510	3rd FM IF Transformer (Primary)	1	X
T6	RL14B552	3rd FM IF Transformer (Secondary)	1	X
T7	RLM1C20	MPX Coil	1	X
T8	RLM1C5-K	MPX Coil	1	X
T9	RLT5H104-V	Power Transformer	1	Ⓝ X
CF	RVFCF10S12CB	Ceramic Filter	1	X
VARIABLE RESISTORS				
R35	RVVHC20B54-A	50KΩ (B), Stereo Spacer Control, W/STEREO-MONO Selector Switch	1	Ⓝ X
R48, 58	EVKC2AL20D14	10KΩ (D), Volume Control	1	X
R30	EVLT0AA00B53	5KΩ (B), Separation Control	1	X
VARIABLE CAPACITOR				
C6, 14, 17, 20	PVC2LX20T3MG	Tuning Gang, W/Trimmer (C5, 15, 18, 19)	1	X
COMPONENT COMBINATIONS				
M1	EXA5DL04C	330PF×3, 4.7KΩ×2	1	Y
M2	RXABPF10801C	Coils & Capacitors	1	Y
M3	RXAF103P22HD	0.01μF×2	1	Y
SWITCHES				
S1-1~S1-4	RSH45B-A	Band Selector Switch	1	Ⓝ X
S2-1, S2-2	RSS78A	Tone Switch	1	Ⓝ X
S3	RSS77A	Power Source Switch	1	Ⓝ X
SPEAKERS				
SP1, 2	EAS10P75SL	10cm (4") PM Dynamic Speaker, Imp. 8Ω	2	Ⓝ X
CABINET				
	#RYMRF973BXG	Cabinet Body (Complete)	1	Ⓝ X
CA1	(RKM190B)	Cabinet Body (Not Available Order RYMRF973BXG)		
	RJS34A-X	Connecting Socket	2	Z
CA2	RKH47A	Handle, Cabinet	1	Ⓝ Y
CA3	RKT46A	Metal Fitting, Handle	2	Y
	XTW3D10B	Screw, Handle M'tg	2	Z
CA4	RNW1020	Washer, Handle M'tg	4	Z
CA5	RGB350	Badge, NATIONAL PANASONIC Mark	1	Z
CA6	RGK294D	Indicating Plate, IC Mark	1	Ⓝ Z
CA7	RGK364A	Indicating Plate, Volume & Tuning Mark	1	Ⓝ Z
CA8	RGK325B	Indicating Plate, Cabinet Front	1	Ⓝ Z
CA9	RGK326A	Indicating Plate, Cabinet Front	1	Ⓝ Z
CA10	RGK297B	Indicating Plate, Power Mark	1	Ⓝ Z
CA11	RGP174A	Panel, Dial	1	Ⓝ Z
CA12	RGX387A	Ornament, Panel	1	Ⓝ Z
CA13	RGX403A	Ornament, Cabinet Right Side	1	Ⓝ Z
CA14	RGX404A	Ornament, Cabinet Left Side	1	Ⓝ Z
	#RYFRF973BXG	Cover (Complete), Cabinet Back	1	Ⓝ X
CA15	(RKF129C)	Cover Only, Cabinet Back (Not Available Order RYFRF973BXG)		
CA16	RJS34A-X	Connecting Socket	1	Z
CA17	RJK2402E	Case, Battery (With Terminals)	1	Ⓝ Y
	XTW3D10B	Screw, Case M'tg	2	Z
	XTN3D20B	Screw, Case M'tg	1	Z
CA18	RGT294B	Name Plate	1	Ⓝ Z
CA19	RMA5022B	Bracket (Plastic), Whip Antenna	1	Ⓝ Z
CA20	RKK58A	Cover, Battery Compartment	1	Ⓝ X
CA21	XEARCR217EAS	Whip Antenna	1	X
CA22	RMA88A	Bracket (Metal), Whip Antenna	1	Ⓝ Z
	RMS14A	Bracket, Speaker	2	Ⓝ Z

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288, Central Osaka, Japan

ORDER NO. RD-952

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
CA23	RBN141A	Knob, Volume & SE Control	2	Ⓝ X
CA24	RBN142A	Knob, Tuning	1	Ⓝ X
	XSB3+30BNS	Screw, Cabinet Cover M'tg	3	Ⓝ Y
	XYN3DF8S	Screw, Whip Antenna M'tg	1	Z
CA25	RJJ79	Jack, Headphone	1	X
CA26	RUC44A	Bracket, Headphone Jack	1	Ⓝ Z
	CHASSIS			
CH1	RYDRF973BXG	Dial Scale Assembly	1	Ⓝ X
CH1-1	(RKD199B)	Scale		
CH1-2	(RUB58A)	Cam		
CH1-3	(RUL183AS)	Bracket		
CH1-4	(RUL184A)	Bracket		
CH1-5	(RUL185A)	Bracket		
CH1-6	(RUS106A)	Spring		
CH1-7	(RDD900A5)	Drum		
CH1-8	(RDF920AS)	Shaft		
CH1-9	(RDG5617A)	Gear		
CH1-10	(XSN3D6S)	Screw (Not Available Order RYDRF973BXG)		
CH1-11	(XTN23D8B)	Screw		
CH1-12	(XNG4BS)	Nut		
CH1-13	(XWG2×6BW)	Washer		
CH1-14	(XWA4B)	Washer		
CH1-15	(RHD65OAS)	Stay Shaft		
CH1-16	(RHR937A)	Pulley		
CH1-17	(RHR939A)	Pulley		
CH1-18	(RHP618A)	Sheet		
CH1-19	(XTN3D6B)	Screw		
CH1-20	(RHP622A)	Sheet		
CH2	RSE13A	Lever Assembly, Band Selector Switch	1	Ⓝ X
CH3	RJJ51A	Jack, REC OUT (R—L)	1	X
	RJS34A-X	Connecting Socket	4	Z
	RJS32A-X	Connecting Socket, Whip Antenna	1	Z
	RJJ30B	Jack, EXT. Power Source	1	X
	RMC181A	Shield Cover, EXT. Power Jack	1	Ⓝ Z
CH4	RMA346	Bracket, Core Antenna	2	Z
CH5	RHG109	Rubber, Core Antenna M'tg	2	Z
CH6	RDR20	Pulley, Dial	3	Z
	RNW230A	Washer, Pulley M'tg	1	Z
	RNW150-2	Washer, Pulley M'tg	3	Z
CH7	RDS4060A	Spring, Dial	1	Y
CH8	RDZ05-3	Cord, Dial	1 Roll (500m)	Y
CH9	RDT2201B	Shaft, Tuning	1	Ⓝ Y
CH10	RDD302C	Drum, Dial	1	Y
	XSN2+4	Screw, Tone & Power Switch M'tg	2	Z
	XSN26D4	Screw, Tuning Gang M'tg	2	Z
	XYN26D06	Screw, Drum M'tg	1	Z
	XTN3D6F	Screw, Lever Assembly M'tg	2	Z
	XNS7	Nut, Volume & Tuning Shaft M'tg	2	Z
	XWV7	Washer, Volume & Tuning Shaft M'tg	2	Z
	XTN3D8BR	Red Screw, Chassis M'tg	4	Y
	ACCESSORY			
A1	RJA18C	AC Cord, EXT. Power Source	1	Y
	PACKING			
P1	RPP80A	Polyethylene Cover	1	Ⓝ Z
P2	RPN162A	Upper Pad	1	Ⓝ Z
P3	RPN1217A	Bottom Pad	1	Ⓝ Z
P4	RPK220A	Gift Box	1	Ⓝ Y
P5	RPF3A	Polyethylene Bag, AC Cord	1	Z
P6	RQX5461A	Instruction Book	1	Ⓝ Y
P7	RPH163A	Soft Sheet	1	Ⓝ Z

※ Resistors and Capacitors, reter to part list model RF-973B.

CHANGES

■ SPECIFICATIONS

Power Source:	AC 120V 60 Hz or 6V (Four "C" Size Flashlight Batteries) (PANASONIC UM-2 or equivalent)	➡	AC 220~240V 50-60 Hz or 6V (Four "C" Size Flashlight Batteries) (NATIONAL UM-2 or equivalent)
Power Consumption:	4.5 W at 120V (AC Only)		4.5 W at 230V (AC Only)
Speakers:	Two 4" PM Dynamic Speaker		Two 10 cm (4") PM Dynamic Speaker
Dimensions:	11⅛"(Wide)×5⁹⁄₁₆"(High)×2⅞"(Deep)		282(Wide)×142(High)×72(Deep) mm (11⅛"×5⁹⁄₁₆"×2⅞")
Weight:	4 lb. with batteries (Model RF-973)		1.6 kg. (3 lb. 8.4 oz.) without batteries (Model RF-973B)

■ ALIGNMENT INSTRUCTIONS

	FM-RF ALIGNMENT					
(6)	Connect to point **TP1** through FM Dummy antenna, Common to chassis (Refer to fig. 7)	90 MHz	90 MHz [Fig. 3]	Output meter across voice coil.	L_4 (FM OSC Coil) L_1 (FM DET Coil)	(*) Adjust for maximum output.
(7)	〃	106 MHz	106 MHz [Fig. 4]	〃	C_{18} (FM OSC Trimmer) C_5 (FM DET Trimmer)	(*) Adjust for maximum output. Repeat steps (6) and (7).
	(*) Three output responses will be present: proper tuning is the center frequency.					

(Model RF-973)

	FM-RF ALIGNMENT					
(6)	Connect to point **TP1** through FM Dummy antenna, Common to chassis. (Refer to fig. 7)	87.2 MHz	Tuning gang fully closed.	Output meter across voice coil.	L_4 (FM OSC Coil)	(*) Adjust for maximum output.
(7)	〃	90 MHz	Tune to Signal	〃	L_1 (FM DET Coil)	(*) Adjust for maximum output.
(8)	〃	106 MHz	106 MHz [Fig. 4]	〃	C_{18} (FM OSC Trimmer) C_5 (FM DET Trimmer)	Adjust for maximum output. Repeat steps (6)~(8).
	(*) Three output responses will be present; proper tuning is the center frequency.					

(Model RF-973B)

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Service Manual

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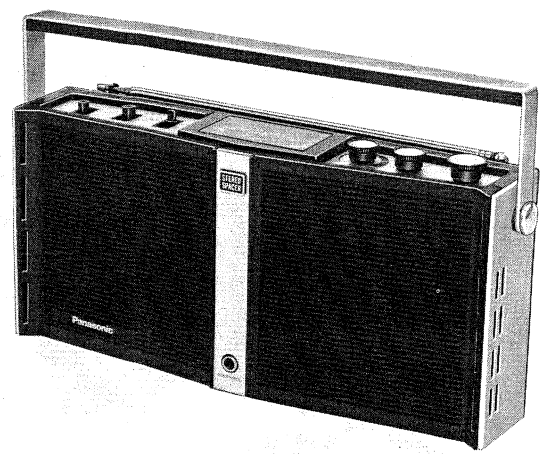
FM-AM FM STEREO PORTABLE RADIO

MODEL RF-973



■ SPECIFICATIONS

Frequency Range:	FM 87.5~108 MHz AM 525~1605 kHz
Intermediate Frequency:	FM 10.7 MHz AM 455 kHz
Sensitivity:	FM 1μV for 50mW Output AM 50μV/m for 50mW Output
Power Output:	750mW×2 Maximum
Power Source:	AC 120V 60 Hz or 6V (Four "C" Size Flashlight Batteries) (PANASONIC UM-2 or equivalent)
Power Consumption:	4.5W at 120V (AC Only)
Speakers:	Two 4" PM Dynamic Speaker
Dimensions:	11⅛"(Wide)×5⅝"(High)×2⅞"(Deep)
Weight:	4 lb. with batteries
Impedance:	Speaker ..... 8Ω Recording Out Jack.... 10kΩ Headphone Jack..... 8Ω

■ TO REMOVE CHASSIS

1. Remove three (3) control knobs from cabinet.
2. Remove three (3) cover screws, nos 1~3, as illustrated in fig. 1.
3. Remove cabinet cover.
4. Pull out three (3)sockets to cabinet cover, as illustrated in fig. 2.
5. Pull out five (5) sockets to cabinet, as illustrated in fig. 2.
6. Remove four (4) red chassis screws, nos. 1~4, as illustrated in fig. 3.
7. To remove chassis completely, unsolder leadwire to speaker bracket.
8. To reassemble, reverse the above procedure.

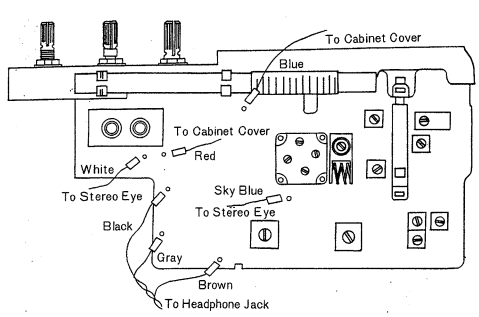


Fig. 2

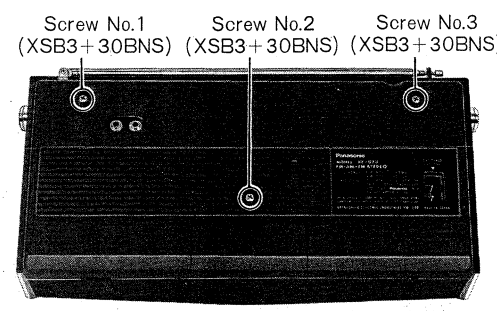


Fig. 1

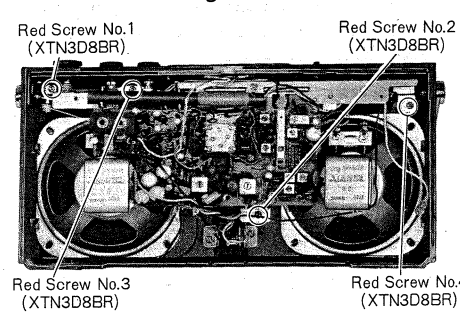


Fig. 3

MATSUSHITA ELECTRIC CORP. OF AMERICA Pan-Am Bldg., 200 Park Ave. New York, N.Y. 10017
MATSUSHITA ELECTRIC OF HAWAII, INC. 320, Waiakamilo Road Honolulu, Hawaii 96817
MATSUSHITA ELECTRIC OF CANADA LTD. 40 Ronson Drive, Rexdale, Ont.

ORDER NO. RD-946

■ TO REMOVE DIAL SCALE ASSEMBLY

1. Remove chassis from cabinet.
2. Remove scale assembly screw, as illustrated in fig. 1.

• To Reassemble Dial Scale Assembly

1. Set tuning gang to maximum capacity.
2. Loosen two (2) dial scale screws, as illustrated in fig. 2.
3. Set the lever at the position as illustrated in fig. 2.
4. Insert the lever in the hole of dial drum as illustrated in fig. 2.
5. Screw the dial scale assembly to chassis as illustrated in fig. 1.

• To Mount Dial Scale

1. Fix the dial scale drum, as illustrated in fig. 3.
2. Set the start point of dial scale to the mark of chassis.
3. Screw the two (2) dial scale screws, as illustrated in fig. 2.

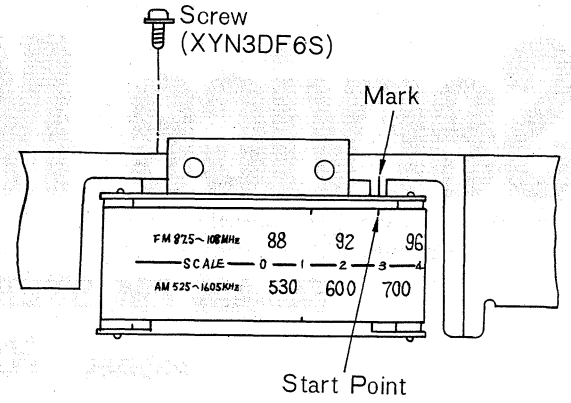


Fig. 1

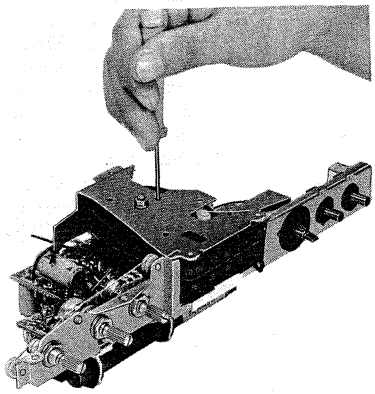


Fig. 3

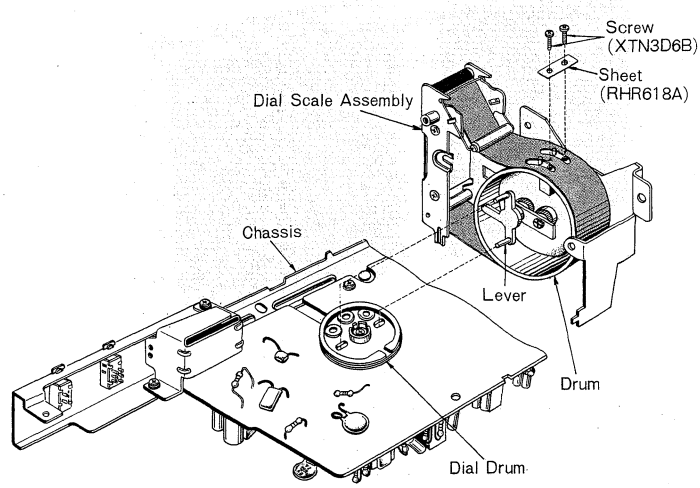
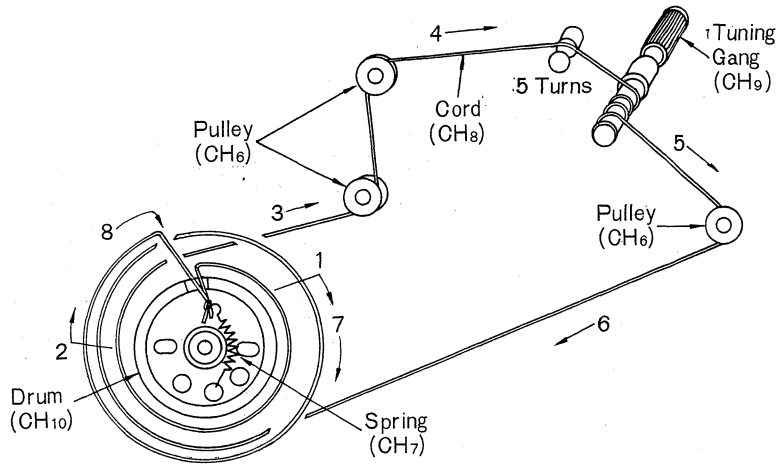


Fig. 2

■ DIAL CORD INSTALLATION GUIDE

1. Remove dial scale from chassis.
2. Dial cord length is 37 13/32".
3. Set tuning gang to minimum capacity.
4. Arrows (1~8) indicate correct order and direction of installation dial cord.
5. Cement dial cord ends.



■ ALIGNMENT INSTRUCTIONS

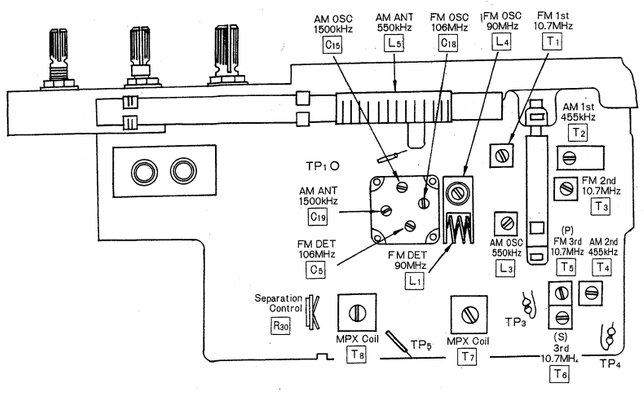
READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes:

1. Set volume control to maximum.
2. Set tone switch to treble.
3. Set band selector switch to AM or FM.
4. Set stereo spacer control to MONO.
5. Set power source switch to ON.
6. Set power source voltage to 6 volts DC.
7. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING (DISTANCE)	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
	AM ALIGNMENT					
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T_2 (1st IFT) T_4 (2nd IFT)	Adjust for maximum output.
2	〃	550 kHz	550 kHz (Fig. 1)	〃	L_3 (OSC Coil) (＊) L_5 (ANT Coil)	Adjust for maximum output. Adjust L_5 by moving coil bobbin along ferrite core.
3	〃	1500 kHz	1500 kHz (Fig. 2)	〃	C_{15} (OSC Trimmer) C_{19} (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	＊Cement antenna bobbin with wax after completing alignment.					
	FM-IF ALIGNMENT					
4	High side thru. 0.001μF to point **TP1**, Common to chassis.	10.7 MHz (400 kHz SWP.)	Point of non-interference. (on/about 100 MHz).	Connect vert. amp. of scope to point **TP3**. Common to chassis.	T_1 (FM 1st IFT) T_3 (FM 2nd IFT) T_5 (FM 3rd IFT) (Primary)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to fig. 5)
5	〃	〃	〃	Connect vert. amp. of scope to point **TP3**. Common to chassis.	T_6 (FM 3rd IFT) (Secondary)	Adjust T_6 so that 10.7 MHz marker appears at the center. (Refer to fig. 6)
	FM-RF ALIGNMENT					
6	Connect to point **TP1** through FM Dummy antenna, Common to chassis (Refer to fig. 7)	90 MHz	90 MHz (Fig. 3)	Output meter across voice coil.	L_4 (FM OSC Coil) L_1 (FM DET Coil)	(＊) Adjust for maximum output.
7	〃	106MHz	106MHz (Fig. 4)	〃	C_{18} (FM OSC Trimmer) C_5 (FM DET Trimmer)	(＊) Adjust for maximum output. Repeat steps (6) and (7).

＊Three output responses will be present: proper tuning is the center frequency.



Alignment Points

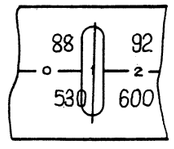


Fig. 1

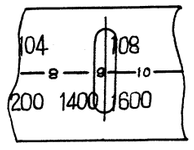


Fig. 2

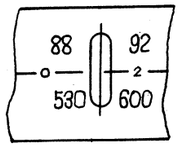


Fig. 3

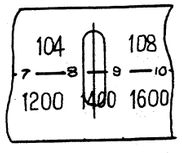
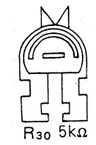


Fig. 4

EQUIPMENT REQUIRED

- ＊Stereo Modulator.....Connect Stereo Modulator output to EXT. Mod. terminal of signal generator.
- ＊Signal Generator.....Modulation Rate of 19 kHz Pilot Signal.....10%.
  Modulation Rate by L+R Signal.....27% (Alignment Step 3)
  Output Level.....30 dB or 60 dB (Alignment Step 2 & 3)
  Frequency.....Approximately 98 MHz
- ＊Oscilloscope
- ＊VTVM
- ＊Dummy Antenna
- ＊Low Pass Filter

Note: When aligning, set R_{30} as illustrated in figure below.



CONTROL SETTING & PROCEDURE

1. Set band selector switch to FM.
2. Set stereo spacer control to STEREO.
3. Set tone switch to treble.
4. Set power source switch to ON.
5. Set power source voltage to 6 volts DC.
6. Set tuning gang to approximately 98 MHz.
7. Set volume control to audible level of speaker sound.

	EQUIPMENT CONNECTIONS			ADJUSTMENT	REMARKS
	SIGNAL GENERATOR	VTVM	OSCILLOSCOPE		
	PILOT CIRCUIT ALIGNMENT				
1	Connect to **TP1** through dummy antenna.	——	Connect vert. amp. of scope to point **TP5**. Common to chassis.	T_7 (MPX Coil)	Adjust T_7 for maximum oscilloscope pattern of 19 kHz.
2	〃	Connect across speaker voice coil of left.	Connect to terminals of VTVM.	T_8 (MPX Coil)	Adjust T_8 for the maximum indication on VTVM from the left side output when the left side of Stereo modulator is modulated.
	SEPARATION ALIGNMENT				
3	〃	〃	〃	R_{30} (Separation Control)	Adjust R_{30} for the minimum indication on VTVM from the left side output when the right side of Stereo modulator is modulated.

■ CABINET PARTS LOCATIONS

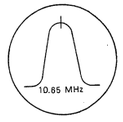


Fig. 5.

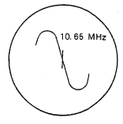


Fig. 6.

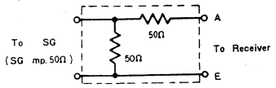
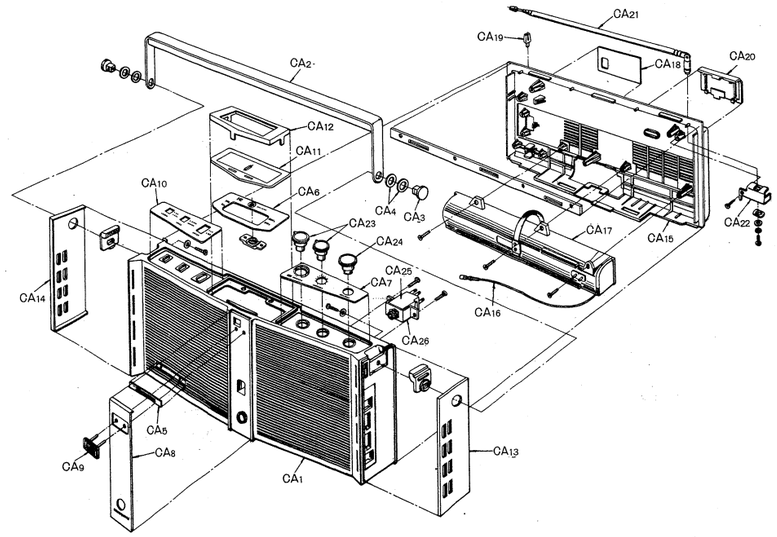
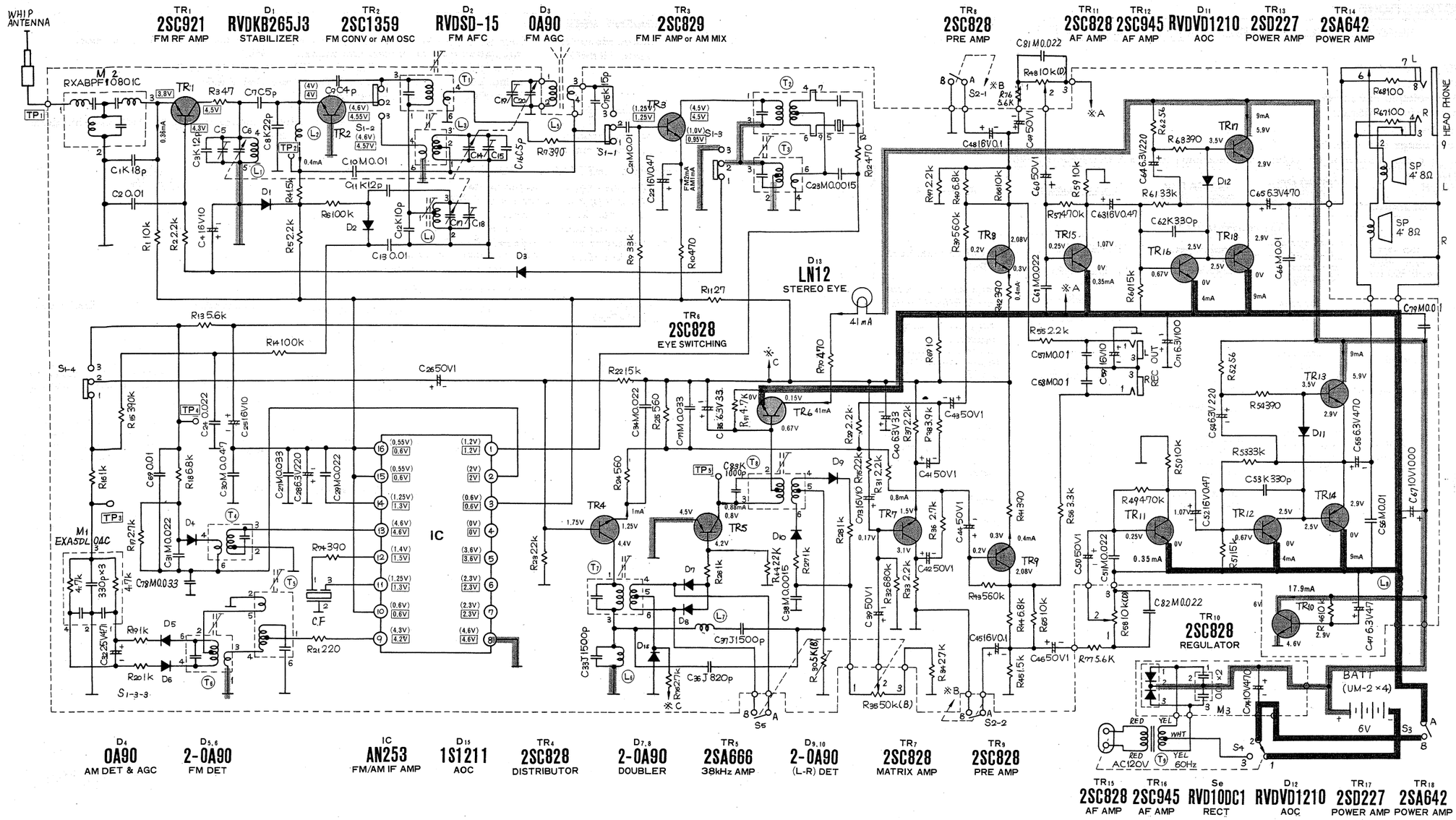


Fig. 7 FM Dummy Antenna



Schematic Diagram – Model RF-973

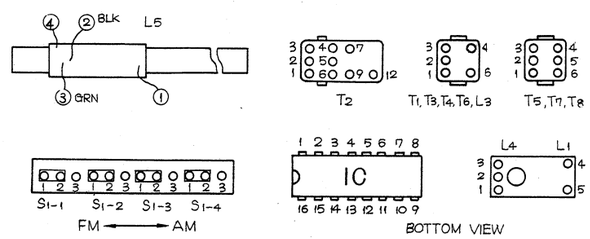


Positive Voltage Line

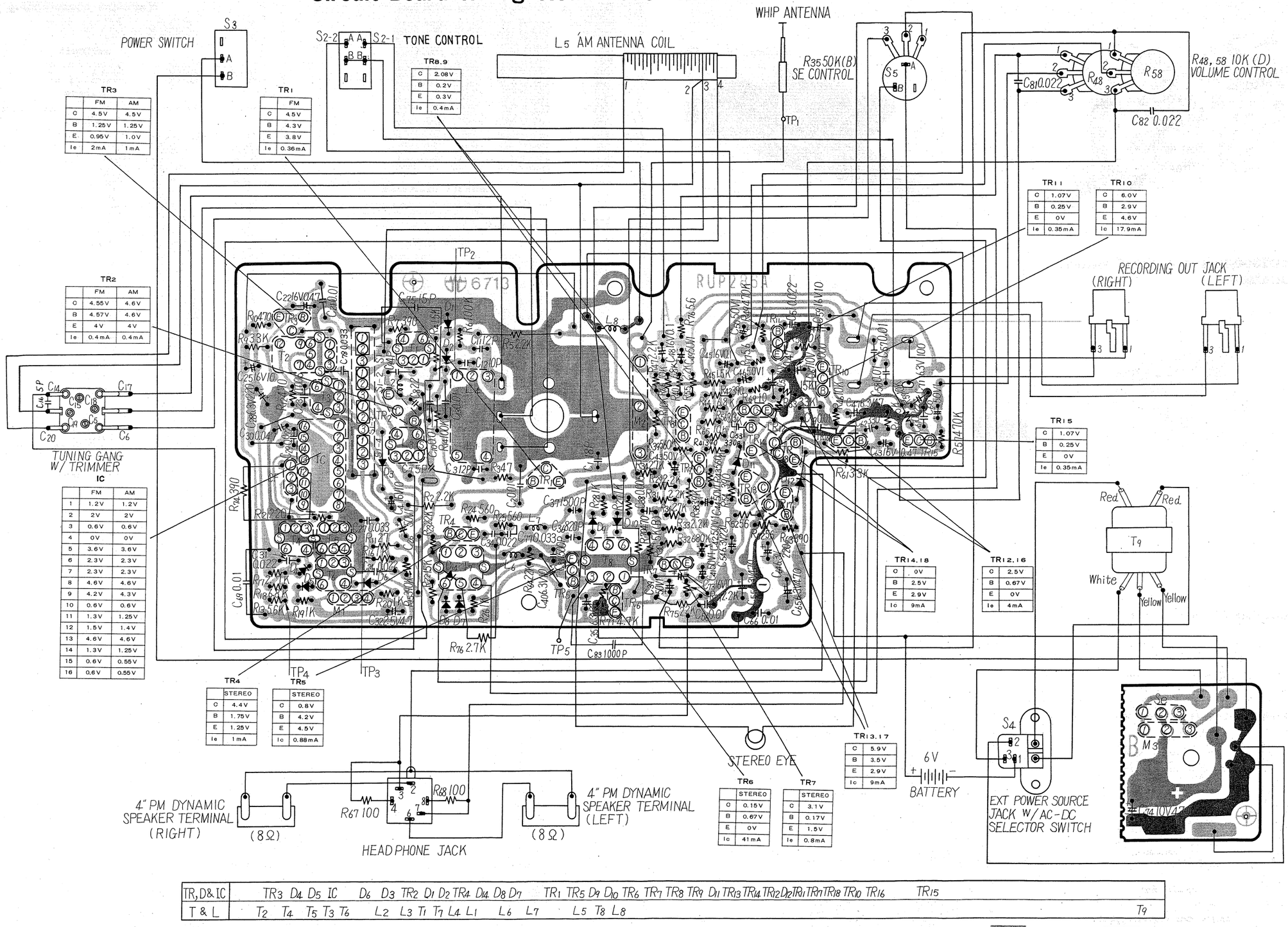
Negative Voltage Line

Notes:

1. S_{1-1}～S_{1-4}: Band selector switch in "FM" position.
2. S_{2-1}～S_{2-2}: Tone switch in "TREBLE" position.
3. S_3 : Power source switch in "OFF" position.
4. S_4 : AC-Battery selector switch in "Battery" position.
5. S_5 : Stereo spacer selector switch in "STEREO" position.
6. DC voltage measurements are taken with circuit tester 10KΩ/V from negative terminal of battery.
   □.....FM position ( ).....AM position
   TR_4～TR_7.....FM STEREO position
7. Battery current: No signal..... 35mA
   Maximum output 300mA



Circuit Board Wiring View–Model RF-973



TR3

	FM	AM
C	4.5V	4.5V
B	1.25V	1.25V
E	0.95V	1.0V
Ie	2mA	1mA

TR1

	FM
C	4.5V
B	4.3V
E	3.8V
Ie	0.36mA

TR8,9

C	2.08V
B	0.2V
E	0.3V
Ie	0.4mA

TR2

	FM	AM
C	4.55V	4.6V
B	4.57V	4.6V
E	4V	4V
Ie	0.4mA	0.4mA

IC

	FM	AM
1	1.2V	1.2V
2	2V	2V
3	0.6V	0.6V
4	0V	0V
5	3.6V	3.6V
6	2.3V	2.3V
7	2.3V	2.3V
8	4.6V	4.6V
9	4.2V	4.3V
10	0.6V	0.6V
11	1.3V	1.25V
12	1.5V	1.4V
13	4.6V	4.6V
14	1.3V	1.25V
15	0.6V	0.55V
16	0.6V	0.55V

TR4

	STEREO
C	4.4V
B	1.75V
E	1.25V
Ie	1mA

TR5

	STEREO
C	0.8V
B	4.2V
E	4.5V
Ic	0.88mA

TR6

	STEREO
C	0.15V
B	0.67V
E	0V
Ic	41mA

TR7

	STEREO
C	3.1V
B	0.17V
E	1.5V
Ie	0.8mA

TR13,17

C	5.9V
B	3.5V
E	2.9V
Ic	9mA

TR14,18

C	0V
B	2.5V
E	2.9V
Ic	9mA

TR12,16

C	2.5V
B	0.67V
E	0V
Ie	4mA

TR11

C	1.07V
B	0.25V
E	0V
Ie	0.35mA

TR10

C	6.0V
B	2.9V
E	4.6V
Ic	17.9mA

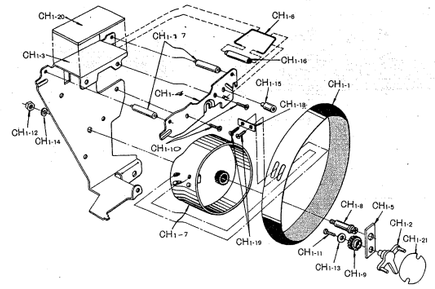
TR15

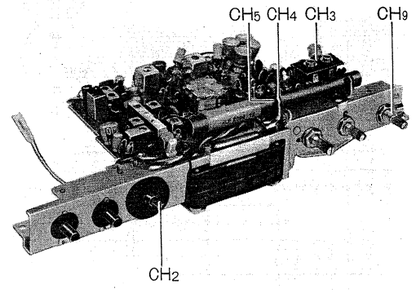
C	1.07V
B	0.25V
E	0V
Ie	0.35mA

TR, D & IC	TR3 D4 D5 IC D6 D3 TR2 D1 D2 TR4 D14 D8 D7 TR1 TR5 D9 D10 TR6 TR7 TR8 TR9 D11 TR13 TR14 TR12 D12 TR11 TR17 TR18 TR10 TR16 TR15
T & L	T2 T4 T5 T3 T6 L2 L3 T1 T7 L4 L1 L6 L7 L5 T8 L8 T9

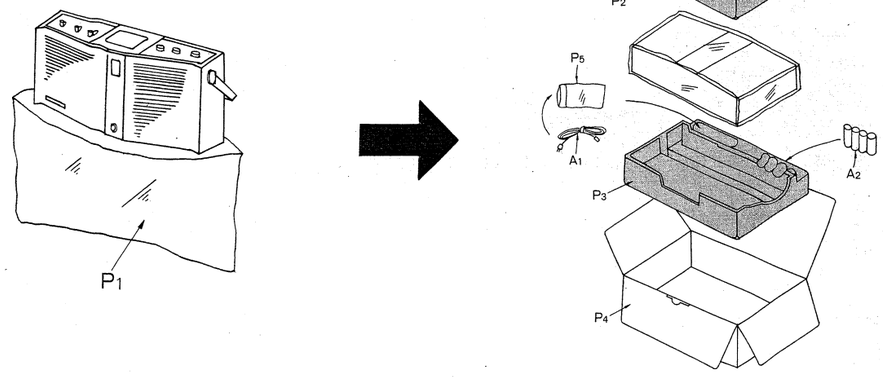
Positive Voltage Line Negative Voltage Line

■ CHASSIS PARTS LOCATIONS





■ ACCESSORIES & PACKING PARTS LOCATIONS



■ REPLACEMENT PARTS LIST

NOTES: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Ⓝ indicates the New Parts.
3. **X**–**Z** rank: **X** rank parts will cover 80% of repair needs. **X**+**Y** rank parts will cover 95% of repair needs. **Z** rank parts are less necessary.

Ref.No.	Part No.	Description	Per Set (Pcs.)	Remarks
INTEGRATED CIRCUIT, TRANSISTORS AND DIODES				
IC1	AN253	IF Amplifier	1	X
TR1	2SC921	FM RF Amplifier	1	X
TR2	2SC1359	FM Converter & AM Oscillator	1	X
TR3	2SC829	FM IF Amplifier & AM Mixer	1	X
TR4,6,7, 8,9,10, 11,15	2SC828	Distributor, Eye Switching, Matrix Amplifier, Regulator, Pre Amplifier, AF Amplifier	8	X
TR5	2SA666	38kHz Amplifier	1	X
TR12,16	2SC945	AF Amplifier	2	X
TR13,17	2SD227	Power Amplifier	2	X
TR14,18	2SA642	Power Amplifier	2	X
D1	RVDKB265J3	Stabilizer	1	X
D2	RVDSC-15	FM AFC	1	X
D3,4	0A90	FM AGC, AM Detector & AGC	2	X
D5,6,7,8, 9,10	2-0A90	FM Detector, Doubler, (L-R) Detector	3pairs	X
D11,12	RVDVD1210	Operation Compensator	2	X
D14	LN12	Stereo Eye	1	Ⓝ X
D15	1S1211	Operation Compensator	1	X
RECTIFIER				
Se	RVD10DC1	Rectifier	1	X
COILS AND TRANSFORMERS				
L1,4	RLE53	FM Detector & Oscillator Coil	1	Ⓝ X
L2	RLQY75S2-0	Choke Coil	1	Y
L3	RLQ2B90-M	AM Oscillator Coil	1	X
L5	RLF2D94	AM Antenna Coil	1	X
L6,7	RLM1X1-Y	Choke Coil	2	Y
L8	RLQY10G5-0	Choke Coil	1	Y
L9	RLQY25S5-0	Choke Coil	1	Y
T1	RLI4B153-M	1st FM IF Transformer	1	X
T2	RLI7W105Q-T	1st AM IF Transformer	1	X
T3	RLI4B251	2nd FM IF Transformer	1	X
T4	RLI2B4500-M	2nd AM IF Transformer	1	X
T5	RLI4B510	3rd FM IF Transformer (Primary)	1	X
T6	RLI4B552	3rd FM IF Transformer (Secondary)	1	X
T7	RLM1C20	MPX Coil	1	X
T8	RLM1C5-K	MPX Coil	1	X
T9	RLT5H100-W	Power Transformer	1	Ⓝ X
CF	RVFCF10S12CB	Ceramic Filter	1	X
RESISTORS				
R52,62	ERD18VJ560	56Ω, ⅛Watt, Carbon	2	Y
R69	ERD18VJ100	10Ω, ⅛Watt, Carbon	1	Y
R11	ERD18VJ270	27Ω, ⅛Watt, Carbon	1	Y
R3	ERD18VJ470	47Ω, ⅛Watt, Carbon	1	Y
R7,41,42, 54,63	ERD18VJ391	390Ω, ⅛Watt, Carbon	5	Y
R10,12	ERD18VJ471	470Ω, ⅛Watt, Carbon	2	Y
R24,25	ERD18VJ561	560Ω, ⅛Watt, Carbon	2	Y
R19,20,27 28	ERD18VJ102	1KΩ, ⅛Watt, Carbon	4	Y
R4,45	ERD18VJ152	1.5KΩ, ⅛Watt, Carbon	2	Y
R29,31,33, 37,47,55	ERD18VJ222	2.2KΩ, ⅛Watt, Carbon	6	Y
R17,36	ERD18VJ272	2.7KΩ, ⅛Watt, Carbon	2	Y
R56	ERD18VJ332	3.3KΩ, ⅛Watt, Carbon	1	Y
R38	ERD18VJ392	3.9KΩ, ⅛Watt, Carbon	1	Y
R76,77	ERD18VJ562	5.6KΩ, ⅛Watt, Carbon	2	Y
R18,40,44	ERD18VJ682	6.8KΩ, ⅛Watt, Carbon	3	Y

Ref.No.	Part No.	Description	Per Set (Pcs.)	Remarks
R1,46,50,59, 65,66	ERD18VJ103	10KΩ, ⅛Watt, Carbon	6	Y
R22,51,60	ERD18VJ153	15KΩ, ⅛Watt, Carbon	3	Y
R23,64	ERD18VJ223	22KΩ, ⅛Watt, Carbon	2	Y
R34	ERD18VJ273	27KΩ, ⅛Watt, Carbon	1	Y
R9,53	ERD18VJ333	33KΩ, ⅛Watt, Carbon	2	Y
R6,14	ERD18VJ104	100KΩ, ⅛Watt, Carbon	2	Y
R73	ERD18TJ471	470Ω, ½Watt, Carbon	1	Y
R32	ERD18TJ684	680KΩ, ⅛Watt, Carbon	1	Y
R15	ERD18VJ394	390KΩ, ⅛Watt, Carbon	1	Y
R49,57	ERD18VJ474	470KΩ, ⅛Watt, Carbon	2	Y
R39,43	ERD18VJ564	560KΩ, ⅛Watt, Carbon	2	Y
R13	ERD18TJ562	5.6KΩ, ½Watt, Carbon	1	Y
R67,68	ERD18TJ101	100Ω, ½Watt, Carbon	2	Y
R21	ERD18TJ221	220Ω, ½Watt, Carbon	1	Y
R70	ERD18TJ391	390Ω, ½Watt, Carbon	1	Y
R16,26	ERD18TJ102	1KΩ, ½Watt, Carbon	2	Y
R2,5	ERD18TJ222	2.2KΩ, ½Watt, Carbon	2	Y
R71	ERD18TJ223	22KΩ, ½Watt, Carbon	1	Y
R61	ERD18TJ333	33KΩ, ½Watt, Carbon	1	Y
R74	ERD18TJ272	2.7KΩ, ½Watt, Carbon	1	Y
R75	ERD18TJ472	4.7KΩ, ½Watt, Carbon	1	Y
VARIABLE RESISTORS				
R35	RVVHC20B54-A	50KΩ(B), Stereo Spacer Control, W/STEREO-MONO Selector Switch	1	Ⓝ X
R48,58	RVVKA20D14-B	10KΩ(D), Volume Control	1	Ⓝ X
R30	EVLT0AA00B53	5KΩ(B), Separation Control	1	X
CAPACITORS				
C9	ECCD1H040C	4mmf, 50WV, Ceramic	1	Z
C7,16	ECCD1H050CC	5mmf, 50WV, Ceramic	2	Z
C53,62	ECCD1H331K	330mmf, 50WV, Ceramic	2	Z
C2,13,69	ECKE1H103PF	0.01mfd, 50WV, Ceramic	3	Z
C72	ECMS05150K-H	15mmf, 50WV, Mica	1	Z
C12	ECMS05100K-H	10mmf, 50WV, Mica	1	Z
C11	ECMS05120K-H	12mmf, 50WV, Mica	1	Z
C1,3	ECMS05180K-H	18mmf, 50WV, Mica	2	Z
C8	ECMS05220K-H	22mmf, 50WV, Mica	1	Z
C10,21,79	ECKE1H103MD	0.01mfd, 50WV, Ceramic	3	Z
C24	ECKE1H223PF	0.022mfd, 50WV, Ceramic	1	Z
C36	ECQS05821JZ	820mmf, 50WV, Styrol	1	Z
C33,37	ECQS05152JZ	1500mmf, 50WV, Styrol	2	Z
C83	ECQS05102KZ	1000mmf, 50WV, Styrol	1	Z
C23,38	ECQG05152MZ-N	0.0015mfd, 50WV, Polyester	2	Z
C56,57,58,66	ECQG05103MZ-N	0.01mfd, 50WV, Polyester	4	Z
C30	ECQG05473MZ-N	0.047mfd, 50WV, Polyester	1	Z
C29,31,34,51, 61,81,82	ECQG05223MZ-N	0.022mfd, 50WV, Polyester	7	Z
C27,77,78	ECQG05333MZ-N	0.033mfd, 50WV, Polyester	3	Z
C45,48	ECAG16ER1-Y	0.1mfd, 16WV, Electrolytic	2	Y
C22,52,63	ECAG16ER47-Y	0.47mfd, 16WV, Electrolytic	3	Y
C35	ECEA6V33	33mfd, 6.3WV, Electrolytic	1	Y
C47	ECEA6V47	47mfd, 6.3WV, Electrolytic	1	Y
C71	ECEA6V100	100mfd, 6.3WV, Electrolytic	1	Y
C28,54,64	ECEA6V220	220mfd, 6.3WV, Electrolytic	3	Y
C55,65	ECEA6V470	470mfd, 6.3WV, Electrolytic	2	Y
C67	ECEA10V1000	1000mfd, 10WV, Electrolytic	1	Y
C74	ECEA10V470	470mfd, 10WV, Electrolytic	1	Y
C4,25,40,59,73	ECEA16V10	10mfd, 16WV, Electrolytic	5	Y
C32	ECEA25V4R7	4.7mfd, 25WV, Electrolytic	1	Y
C26,39,41,42, 43,44,50,60, 46,49	ECEA50V1	1mfd, 50WV, Electrolytic	10	Y
VARIABLE CAPACITOR				
C6,14,17,20	PVC2LX20T3MG	Tuning Gang, W/Trimmer (C5,15,18,19)	1	X

Ref.No.	Part No.	Description	Per Set (Pcs.)	Remarks
COMPONENT COMBINATIONS				
M1	EXA5DL04C	330PF×3, 4.7KΩ×2	1	Y
M2	RXA8PF10801C	Coils & Capacitors	1	Y
M3	RXAF103P22HD	0.01μF×2	1	Y
SWITCHES				
S1-1～S1-4	RSH45B-A	Band Selector Switch	1	Ⓝ X
S2-1, S2-2	RSS78A	Tone Switch	1	Ⓝ X
S3	RSS77A	Power Source Switch	1	Ⓝ X
SPEAKERS				
SP1,2	EAS10P75SL	4" PM Dynamic Speaker, Imp. 8Ω	2	Ⓝ X
CHASSIS				
CH1	RYDRF973M	Dial Scale Assembly	1	Ⓝ X
CH1-1	RKD199B	Scale	(1)	
CH1-2	RUB58A	Cam	(1)	
CH1-3	RUL183AS	Bracket	(1)	
CH1-4	RUL184A	Bracket	(1)	
CH1-5	RUL185A	Bracket	(1)	
CH1-6	RUS106A	Spring	(1)	
CH1-7	RDD9005A	Drum	(1)	
CH1-8	RDF920AS	Shaft	(1)	
CH1-9	RDG5617A	Gear (Order RYDRF973M)	(1)	
CH1-10	XSN3D6S	Screw	(2)	
CH1-11	XTN23D8B	Screw	(1)	
CH1-12	XNG4BS	Nut	(1)	
CH1-13	XWG2×6BW	Washer	(1)	
CH1-14	XWA4B	Washer	(1)	
CH1-15	RHD650AS	Stay Shaft	(1)	
CH1-16	RHR937A	Pulley	(1)	
CH1-17	RHR939A	Pulley	(2)	
CH1-18	RHP618A	Sheet	(1)	
CH1-19	XTN3D6B	Screw	(2)	
CH1-20	RHP622A	Sheet	(1)	
CH1-21	RHP620	Sheet	(1)	
CH2	RSE13A	Lever Assembly, Band Selector Switch	1	Ⓝ X
CH3	RJJ51A	Jack, REC OUT (R—L)	1	X
	RJS34A-X	Conecting Socket	4	Z
	RJS32A-X	Conecting Socket, Whip Antenna	1	Z
	RJJ29A	Jack, EXT. Power Source	1	X
	RMC181A	Shield Cover, EXT. Power Jack	1	Ⓝ Z
CH4	RMA346	Bracket, Core Antenna	2	Z
CH5	RHG109	Rubber, Core Antenna	2	Z
CH6	RDR20	Pulley, Dial	3	Z
	RNW230A	Washer (Large), Pulley M'tg	1	Z
	RNW150-2	Washer (Large), Pulley M'tg	3	Z
CH7	RDS4060A	Spring, Dial	1	Y
CH8	RDZ05-3	Cord, Dial	1 Roll	Y
CH9	RDT2201B	Shaft, Tuning	1	Ⓝ Y
CH10	RDD302C	Drum, Dial	1	Y
	XSN2-H4	Screw, Tone & Power Switch M'tg	2	Z
	XSN26D4	Screw, Tuning Gang M'tg	2	Z
	XYN26DC6	Screw, Drum M'tg	1	Z
	XTN3D6F	Screw, Lever Assembly M'tg	2	Z
	XNS7	Nut, Volume & Tuning Shaft M'tg	2	Z
	XWV7	Washer, Volume & Tuning Shaft M'tg	2	Z
	XTN3D8BR	Red Screw, Chassis M'tg	4	Y
ACCESSORIES				
A1	RJA22A	AC Cord, EXT. Power Source	1	Y
A2	UM2DE(P)	Battery	4	Y
PACKING				
P1	RPP80A	Polyethylene Cover	1	Ⓝ Z
P2	RPN1162A	Upper Pad	1	Ⓝ Z
P3	RPN1163A	Bottom Pad	1	Ⓝ Z
P4	RPG832A	Packing Case	1	Ⓝ Z
P5	RPF3A	Polyethylene Bag, AC Cord	1	Z
P6	RQX5445A	Instruction Book	1	Ⓝ Y

CABINET

Ref.No.	Part No.	Description	Per Set (Pcs.)	Remarks
CA1	RKM190B	Cabinet Only (Order RYMRF973M)	(1)	
	RJS34A-X	Conecting Socket	2	Z
CA2	RKH47A	Handle, Cabinet	1	Ⓝ Y
CA3	RKT46A	Metal Fitting, Handle	2	Y
	XTW3D10B	Screw, Handle M'tg	2	Z
CA4	RNW1020	Washer, Handle M'tg	4	Z
CA5	RGB49B	Badge, Panasonic Mark	1	Ⓝ Z
CA6	RGK294B	Indicating Plate, IC Mark	1	Ⓝ Z
	RYMRF973M	Cabinet Front (Complete)	1	Y
CA7	RGK364A	Indicating Plate, Volume & Tuning Mark	1	Ⓝ Z
CA8	RGK325A	Indicating Plate, Cabinet Front	1	Ⓝ Z
CA9	RGK326A	Indicating Plate, Cabinet Front	1	Ⓝ Z
CA10	RGK297B	Indicating Plate, Power Mark	1	Ⓝ Z
CA11	RGP174A	Panel, Dial	1	Ⓝ Z
CA12	RGX387A	Ornament, Panel	1	Ⓝ Z
CA13	RGX403A	Ornament, Cabinet Right Side	1	Ⓝ Z
CA14	RGX404A	Ornament, Cabinet Left Side	1	Ⓝ Z
	RYARF973M	Cabinet (Complete)	1	Ⓝ X
CA15	RKF129A	Cover Only, Cabinet Back (Order RYFRF973M)	1	
CA16	RJS34A-X	Conecting Socket	1	Z
CA17	RJK2402E	Case, Battery (With terminals)	1	Ⓝ Y
	RYFRF973M	Cover (Complete), Cabinet Back	1	Ⓝ Y
	XTW3D10B	Screw, Case M'tg	2	Z
	XTN3D20B	Screw, Case M'tg	1	Z
CA18	RGT294A	Name Plate	1	Ⓝ Z
CA19	RMA5022B	Bracket (Plastic), Whip Antenna	1	Z
CA20	RKK58A	Cover Only, Battery Compartment	1	Ⓝ X
CA21	XEARCR217EAS	Whip Antenna	1	X
CA22	RMA88A	Bracket (Metal), Whip Antenna	1	Ⓝ Z
	RMS14A	Bracket, Speaker	2	Ⓝ Z
CA23	RBN141A	Knob, Volume & SE Control	2	Ⓝ X
CA24	RBN142A	Knob, Tuning	1	Ⓝ X
	XSB3+30BNS	Screw, Cabinet Cover M'tg	3	Ⓝ Y
	XYN3DF8S	Screw, Whip Antenna M'tg	1	Z
CA25	RJJ79	Jack, Headphone	1	X
CA26	RUC44A	Bracket, Headphone Jack	1	Ⓝ Z

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